

U.S.S.N. 10/525,353

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**IN THE DRAWINGS:**

Please substitute the two (2) sheets of drawings submitted herewith (one sheet containing Figures 4 and 5 and one sheet containing Figure 6) in place of the originally-filed drawing sheet containing the same Figures.

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**REMARKS****RECEIVED  
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Claims 6-19 are pending in the application. All claims stand rejected under 35 U.S.C. §103 as being unpatentable over Ergun, U.S. Publication No. 2002/0013486 A1. The Examiner's comments in this regard have been carefully considered by Applicants, and Applicants respectfully submit that the case, as presently amended, is in a condition for allowance.

**Specification Objections**

With regard to the specification rejections set forth at paragraph 1 of the Office Action concerning the "Detailed Description Of The Drawings", Applicants respectfully submit that the Preliminary Amendment filed February 23, 2005 included a heading for the detailed description on page 2 of the English language translation of the specification between the fourth and fifth full paragraphs of the specification. This amendment was further reflected on page 2 of the marked up version of the English language translation submitted along with the Preliminary Amendment. Nevertheless, for the sake of clarity and completeness, Applicants submit substitute drawing sheets wherein Figure 6 has been enlarged to reveal details which may not have been clear from the drawings as originally submitted. Further, Applicants have amended the specification at pages 2 and 3 to more clearly reflect what is shown in the drawings. No new matter has been added. Accordingly, Applicants respectfully request that the specification objections directed toward the detailed description of the drawings be withdrawn.

Further, Applicants have amended the specification in several instances to reflect that the globules of the dispersion can be as little as 1  $\mu\text{m}$ . The lower level of the globule size as originally presented was a clerical error. The error is clear, for example, from Figures 3-5 which show the production of globule sizes as small as 1  $\mu\text{m}$ . Further, the specification as originally filed at page 7 notes that the apparatus used in the present invention is able to produce a dispersion with a globule size of about 1  $\mu\text{m}$ . Accordingly, no new matter has been added by these corrections to the globule size noted in the specification.

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**Rejections Under 35 U.S.C. §103**

Applicants traverse the rejections under 35 U.S.C. §103 and submit that a *prima facie* case of obviousness has not been established. The rejections appear to be based upon an incomplete understanding of the claims subject matter, as well as the teachings of the Ergun reference.

The claimed subject matter concerns a dispersion process by a dispersion machine. One advantage of the claimed process which uses normal dispersion equipment, is that it creates a temporarily stable dispersion which, in turn, allows the phases of the mixture to be separated rapidly. Until the present invention, it had been assumed that a dispersion would separate only very slowly. The present invention, however, surprisingly recognized that a certain dispersion can be formed which allows for a very rapid phase separation. As described at page 3 of the specification as originally filed, a dispersion is a multi-phase mixture which is characterized by components which are insoluble. The distribution of the dispersed material in the dispersion is so fine that the dispersion appears to be a homogenous-stable mixture. Dispersions are generally independent of the separation characteristics of the phases within the mixture. In contrast, an emulsion is a multi-phase mixture whose phases separate only very slowly, or not at all. Again, an emulsion is specifically described in the specification as originally filed at page 3.

The Ergun reference describes a process for production of bio-diesel by emulsifying the reactants for the reaction. As mentioned above, emulsification inherently causes long or infinite separation times, which presents difficulties in relation to the relevant process. The Office Action asserts that the Ergun reference teaches the use of dynamic turbulence and/or a static mixer to disperse the fatty acids and alcohol and reduce the drop size of the liquid to be trans-esterified. Applicants traverse the suggestion in the Office Action, however, that Ergun teaches a dispersion process as claimed in the present application. The dispersion process of the present application allows for very rapid phase separation of the mixture. The emulsification process described in the Ergun reference, despite the disclosure of a static mixer or turbulence producer, does not reduce the phase separation time. Instead, the emulsification process of Ergun, like all emulsions, has a long or infinite separation time. See, for example, paragraph [0015] of Ergun wherein it notes that "the method according to this invention is not suited for the sole-called sedimentation

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method, since the sedimentation times would be too long due to the fine distribution of the drops." Accordingly, the Ergun reference does not describe the use of a dispersion method as recited in all of the present claims. For this reason, Applicants respectfully request that the rejections under 35 U.S.C. §103 be withdrawn.

Further, the rejections under 35 U.S.C. §103 should be withdrawn because the static mixer 12 of Figure 1 in Ergun or the dynamic emulsifier 25 in Figure 2 do not support the assertion in the Office Action that globule sizes in the range of 1 to 50  $\mu\text{m}$  are possible. The Ergun reference does not disclose any globule size at all capable of being produced by the static mixer 12 or the dynamic emulsifier 25. Moreover, the claimed globule size of the present application is not an inherent property of the mixer 12 or emulsifier 25 disclosed in Ergun. The argument that the claimed globule range is inherently taught by the Ergun reference cannot stand where there is no supporting teaching in the prior art for such an assertion. *See In Re Spormann*, 363 F.2d 444 (CCPA 1966). For this additional reason, the rejections under 35 U.S.C. §103 should be withdrawn.

Applicants further submit that one of skill in the art would not be motivated to modify the Ergun reference as the Office Action proposes because the Ergun reference is directed an emulsification process not a dispersion process. The fact that one of skill in the art has the capability to arrive at the invention is not the test for whether one of skill in the art would have arrived at the invention based upon the teachings of the prior art. *Ex Parte Levengood*, 28 USPQ2d 1300-1301, 1302 (BPAI 1993). The focus must remain on what the prior art suggested to one of skill in the art at the time the invention was made. In this case, the Ergun reference relates to an emulsification process, and merely discloses a static mixer or dynamic emulsifier to aid in that process. However, the Ergun reference teaches away from the use of these devices as an aid to improving phase separation times. Further, there is no support in the Ergun reference that the disclosed static mixer or dynamic emulsifier is capable of producing the globule sizes claimed in the present application.

The Applicants therefore submit that the present claims are allowable because the Ergun reference does not disclose or suggest each and every feature of Applicants' claimed invention. Further, no valid reason has been shown as to why one of ordinary skill in the art would modify the Ergun reference to arrive at the claimed invention, particularly because the Ergun reference is directed toward

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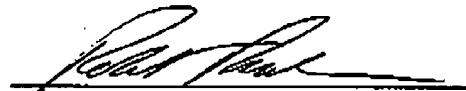
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emulsification processes which, by definition, have very long or infinite phase separation times. Accordingly, Applicants submit that the rejections under 35 U.S.C. §103 should be withdrawn and a Notice of Allowance indicating the allowability of claims 6-19 should be issued. The Examiner is invited to telephone the Applicants' undersigned attorney at (248) 223-9500 if any unresolved matters remain. A Petition for Extension of Time (one month) accompanies this paper.

Respectfully Submitted,

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